VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Valley Regional Office

INTRA-AGENCY MEMORANDUM

4411 Early Road - P. O. Box 3000 Harrisonburg, VA 22801-3000

Permit Writer	Kevin Covington		**Date**	Draft 2/21/13
Air Permit Manager	Janardan Pandey		**Date**	
Memo To	Air Permit File			
Facility Name	QG LLC (QuadGraphics)			
Registration Number	81112			
County-Plant I.D.	069-0102			
UTM Coordinates (Zone 17)	746.6	**Easting (km)**	4344.6	**Northing (km)**
Elevation (feet)	~700			
Distance to Nearest Class I Area (select one)	~30	**SNP (km)**	--	**JRF (km)**
FLM Notification Required (Y/N)	No			
AIRS Classification (A, SM, SM80, B)	SM80	**Before permit action**	SM80	**After permit action**
Pollutants for Which the Source is Title V Major	None	**Before permit action**	None	**After permit action**
PSD Major Source (Y/N)	No	**Before permit action**	No	**After permit action**
Pollutants for Which the Source is PSD Major	None	**Before permit action**	None	**After permit action**

I. Introduction

QG, LLC (which uses the name QuadGraphics) operates a heatset web offset lithographic printing facility located in the Stonewall Industrial Park in Frederick County. The facility has two air permits: (i) a minor new source review (NSR) permit issued May 18, 2009, as most recently amended March 14, 2012 (the "existing minor NSR permit"); and (ii) a state operating permit (SOP) issued November 30, 2005, as most recently amended August 18, 2010 (the "existing SOP").

The facility consists of the following emission units, as listed in Condition 1 of the existing SOP:

- Two Rockwell Goss C-700 heatset web offset lithographic printing presses, each with four printing units (P1, P2);
- Two Harris N-900 III heatset web offset lithographic printing presses (P9, P11);
- Two Manroland Lithoman heatset web printing presses (P12, P13);
- Safety Kleen solvent parts washing operations; and
- Plate cleaning operations.

On January 2, 2013, the Valley Regional Office (VRO) received a Form 7 application dated December 20, 2012 that requests authorization for the following actions:

- Remove the existing press P11 (a Harris N-900 III press);
- Install two new presses P14 and P15 (both Goss C-500 presses); and
- Replace all four printing units on press P9 (the other Harris N-900 III press).

As described below, the requested actions trigger minor NSR permitting and require both a modification to the facility's existing minor NSR permit and a significant amendment to the existing SOP.

II. Emission Unit(s) / Process Description(s)

QuadGraphics proposes to remove the existing P11 press, which is a Harris N-900 III heatset web offset lithographic printing press that is rated at 390 pounds of ink per hour. The company will replace this unit with two smaller units from another manufacturer. Both new units are Goss C-500 heatset web offset lithographic printing presses that are rated at 1760 feet per minute. The existing P11 press and the two proposed new presses are all sources of VOC emissions. QuadGraphics states that the emissions from the two new units will be roughly equal to the emissions from the existing P11 press that is to be removed. Accordingly, the company is not requesting any changes to the facility's current VOC throughput limits or VOC emission limits that are set forth in Conditions 8 and 10 of the existing minor NSR permit.

QuadGraphics also proposes to replace the four printing units on the existing P9 press (a Harris N-900 III model) with new printing units provided by Goss that are the same as used on the two existing Goss C-700 presses (P1 and P2). This replacement will not increase the capacity of the P9 press, nor will it increase the ink, fountain solution, or solvent wash usage by the P9 press, because this press will still be limited by the web

width and production speed inherent with the Harris N-900 III. This printing unit replacement is similar to the project to replace the printing units on the P1 and P2 presses in 2011, for which DEQ issued an exemption letter dated June 7, 2011.

III. Regulatory Review

A. 9 VAC 5-80-1100 *et seq.* (Article 6) - Minor New Source Review

QuadGraphics' application was received on January 2, 2013. Therefore, this application is subject to the revised Article 6 regulations that became effective on November 7, 2012. The revised minor NSR permitting applicability test eliminates netting. Consequently, only the emission increases from the two proposed new printing presses are considered in the permitting applicability evaluation. (Under the former regulations, the emissions decreases from the existing P11 printing press that will be removed would have been used in a netting calculation.)

QuadGraphics proposes to install two new Goss C-500 printing presses. VOC emissions from printing presses result from VOCs that are present within the inks, the fountain solution, the automatic blanket wash, and the manual blanket wash. Each press has a maximum rated capacity of 1,760 feet/minute. The company states that this maximum printing rate corresponds to a maximum ink throughput of 98.9 lbs/hr. Therefore, the maximum uncontrolled VOC emissions solely from ink for each press are as follows:

98.9 lb ink/hr x 0.44 lb VOC/lb ink x 8760 hr/yr x 1 ton/2000 lb = 190.6 ton/yr

According to the company's data and calculations, each proposed new press has the potential to emit an additional 11.7 tpy of VOC from the fountain solution, automatic blanket wash, and manual blanket wash (see Attachment A). Added together, the total uncontrolled PTE for VOC for each press is 202.3 tpy, and for both presses the PTE is 404.6 tpy. Per 9 VAC 5-80-1105 D.1, the permitting threshold for VOC for existing sources is 10 tpy. Consequently, since the maximum uncontrolled emissions from the two proposed printing presses exceed 10 tpy, this project is subject to minor NSR permitting. Accordingly, this application is being processed as a modification to the existing minor NSR permit.

QuadGraphics also proposes to replace all four existing printing units on the P9 press with four new printing units from another manufacturer. Importantly, the printing capacity of the press with the new printing units will remain the same as the existing press because the web width and production speed will not change. Since the uncontrolled emissions from the P9 press will not increase, this project on its own would not trigger minor NSR permitting. This project is similar to the replacement of all of the printing units on the P1 and P2 presses in 2011. DEQ reviewed that proposal and issued an exemption letter dated June 7, 2011. This aspect of the project is identified as exempt from permitting in the cover letter for the modification to the minor NSR permit.

Some of the VOC emitted by the proposed press will be regulated toxic compounds. However, toxic compound emissions from lithographic printing facilities are no longer

subject to regulation under 9 VAC 5-Chapter 60, Article 5, because EPA made an official determination that lithographic printing is an insignificant source of hazardous air pollutants (HAPs) and that therefore no regulation was required for such sources (see Background Information Document for 40 CFR 63 Subpart KK (National Emission Standards for Hazardous Air Pollutants (HAPs) from the Printing and Publishing Industry)). Consequently, according to 9 VAC 5-60-300 C.5, such sources are not subject to the state Toxics Rule.

B. 9 VAC 5-80-800 *et seq.* (Article 5) – State Operating Permit

The existing SOP must be amended to reflect the removal and addition of printing presses associated with this project. Pursuant to 9 VAC 5-80-980 A.5, projects that are modifications under the minor NSR program cannot be processed as a minor amendment to an SOP. Accordingly, the significant amendment procedures must be followed, pursuant to 9 VAC 5-80-990 A.1. The public participation requirements set forth in 9 VAC 5-80-1020 must be undertaken for all significant amendments, pursuant to 9 VAC 5-80-990 C. These public participation requirements are described in section XI below.

C. 9 VAC 5 Chapter 80, Article 8 – PSD Major New Source Review

QuadGraphics' facility currently is classified as a synthetic minor facility (SM80 for air compliance purposes) because its uncontrolled emissions of regulated pollutants exceed major source thresholds, but its permitted emission limits (PTE) prevent the facility's actual emissions from exceeding the major source thresholds. The company has specifically requested no changes to the VOC and HAP emission limits in its existing permits. Thus the facility's permitted PTE of 95.2 tpy of VOC, as reflected by the emission limits set forth in Condition 10 of the modified NSR permit, remains below the major source threshold of 250 tpy. Consequently, the project is not subject to PSD major new source review permitting.

D. 9 VAC 5 Chapter 50, Part II, Article 5 – NSPS

There are no NSPS applicable to QuadGraphics' existing facility or to its proposed projects.

E. 9 VAC 5 Chapter 60, Part II, Article 1 – NESHAPS

There are no NESHAP applicable to QuadGraphics' existing facility or to its proposed projects.

F. 9 VAC 5 Chapter 60, Part II, Article II – MACT

There are no MACT applicable to QuadGraphics' existing facility or to its proposed projects. 40 CFR 63 Subpart KK (National Emission Standards for the Printing and Publishing Industry) does not apply to lithographic printing.

G. 9 VAC 5 Chapter 40, Part II, Existing Sources – Emission Standards

Rule 4-53 is entitled "Emission Standards for Lithographic Printing Processes" for existing sources, and it applies to QuadGraphics. Rule 4-53 has not been revised since 2006, and all of the applicable requirements from this regulation are already included in the existing minor NSR permit.

IV. Best Available Control Technology (BACT) Review (9 VAC 5-50-260)

Pursuant to 9 VAC 5-50-260 C., a project at an existing facility shall apply BACT for each regulated pollutant for which there would be "an increase in the uncontrolled emission rate equal to or greater than the levels in 9 VAC 5-80-1105 D. This requirement applies to each affected emissions unit in the project." As described in section III.A. above, VOC emissions from each proposed new printing press exceed the 10 tpy specified in 9 VAC 5-80-1105 D. Accordingly, BACT applies to VOC emissions from both of the proposed new printing presses.

As described previously, QuadGraphics is removing a larger, existing Harris N-900 III printing press (P11) and replacing it with two new, smaller Goss C-500 printing presses (P14 and P15). The existing P11 press currently is controlled by either RTO 1-12 or RTO 1-01, both of which must achieve at least a 98.0 percent destruction efficiency, per Condition 2 of the existing minor NSR permit. (Both of these RTOs also control the P1, P2, and P9 presses.) The company has proposed to capture VOC emissions from the new P14 and P15 presses similarly to the existing P11 press, and also to control those VOC emissions using the same two RTOs (1-12 and 1-01). DEQ has determined that this VOC capture and destruction strategy constitutes BACT for the two proposed new printing presses P14 and P15.

V. Summary of Controlled Emissions Increase

As described above, QuadGraphics is requesting that its VOC emission limits remain unchanged. Accordingly, there will be no controlled emissions increase resulting from the removal of the existing P11 printing press and the installation of the new P14 and P15 printing presses. Nonetheless, DEQ asked the company to provide recent past actual emissions data for the P11 press that will be removed and estimated actual emissions for the two new printing presses (P14 and P15).

Consistent with prior practice for this facility by DEQ and QuadGraphics, the company's emissions calculations are based on the following assumptions from EPA's Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing (dated September 2006):

- 20% retention of ink VOC in the paper and 80% "carryover" of ink VOC to the dryer and the control device;
- 70% "carryover" of fountain solution VOC to the dryer and the control device (the other 30% of the VOC is released as fugitive emissions);

- 40% carryover of the automatic blanket wash VOC to the dryer and the control device (the other 60% of the VOC is released as fugitive emissions); and
- 50% retention of the cleanup solvent VOC in the cleaning rags (the other 50% of the VOC is released as fugitive emissions).

The controlled emissions from the facility are calculated based upon the required 98.0% destruction efficiency for the RTO being applied to all "carryover" emissions, and no control or destruction applied to the fugitive emissions.

Using these assumptions, QuadGraphics estimates that the recent past actual emissions from the existing P11 press average 5.94 tpy. The company estimates that actual emissions from each press should average 3.24 tpy, which totals 6.48 tpy. Because the facility has been operating below its permitted VOC emission limits, the company expects to be able to continue to operate within those limits upon implementation of this project. Detailed emission calculations for the existing P11 press and for the new P14 and P15 presses are included in Attachment B.

VI. Dispersion Modeling

A. Criteria Pollutants

The project is not subject to modeling for criteria pollutants because there will be no controlled emissions increases for criteria pollutants, as described in Section V above. Moreover, even if there was an increase in VOC emissions from this project, VOC emissions are not modeled according to *DEQ New Source Review Permits Program Manual (September 7, 2000*). Therefore, modeling is not required for criteria pollutants for this project.

B. Toxic Pollutants

Since lithographic printing facilities are not subject to the Air Toxics Rule (9 VAC 5, Chapter 60, Article 5) (as described previously), modeling is not required for toxic pollutant emissions. Moreover, the emission limits for HAP, as established in the existing SOP, are not being increased as a result of this project. Therefore, modeling is not required for toxic pollutants.

VII. Boilerplate Deviations and Changes from Existing Permits

A. Existing Minor NSR Permit

The following changes have been made to the existing minor NSR permit dated May 18, 2009, as most recently amended March 14, 2012. Please note the condition numbers refer to the existing minor NSR permit unless otherwise stated.

- Condition 1 (Equipment list) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

- Condition 2 (Emission controls) – Revised to include the two new presses (P14 and P15) and delete one existing press (P11) on the list of presses that are required to be controlled for VOC emissions.

- Condition 4 (Control parameters) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

- Condition 7 (Shutdown) – Revised to delete the two presses that were removed during the previous permit action, and add the P11 press that is to be removed now.

- Condition 8 (Throughput) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

- Condition 10 (Emission Limits) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

- Conditions 15 and 16 (Initial Compliance Determination) – The requirements for an initial stack test and concurrent VEE are removed.

- New Condition 15 – (Continuing Compliance Determination) – The requirement for stack tests upon request of DEQ is added.

- Condition 18 (On Site Records) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

- Condition 19 (Initial Notifications) – Revised to reflect the addition of the two new presses (P14 and P15) and the removal of one existing press (P11).

B. Existing SOP

The following changes have been made to the existing state operating permit dated November 30, 2005, as most recently amended August 18, 2010. Please note the condition numbers refer to the existing SOP.

- Condition 1 (Equipment list) – Revised to add the two new printing presses (P14 and P15) and to delete the one existing press (P11) that will be removed.

VIII. Compliance Demonstration

A stack test and VEE were conducted in 2012 as a result of the previous permit modification (in which an additional RTO was added). Since the facility's VOC throughput and emission limits are not changing, and since the expected emissions from the two new presses are comparable to the emissions from the existing press that will be removed, DEQ has determined that another round of testing is not necessary at this time.

However, per Conditions 15 and 16 of the modified minor NSR permit, a stack test and/or VEE can be required by DEQ in the future if needed.

The permit requires maintenance of throughput records and Material Safety Data Sheets (MSDS) for the facility, which are unchanged from the existing minor NSR permit. Such records will allow a monthly calculation of VOC throughput and emissions, also required by the permit. The monthly calculation will determine the annual throughput/emissions for the previous consecutive 12-month period. The permit also requires the facility to measure and record combustion chamber temperatures for each RTO.

IX. Title V Review – 9 VAC 5 Chapter 80, Article 1

As described in section III.B. above, the VOC emission limits of 95.2 tpy established in the existing minor NSR permit render QuadGraphics a synthetic minor source for criteria pollutants. This VOC emission limit is below the Title V major source threshold of 100 tpy, so the facility is not subject to Title V permitting requirements due to criteria pollutant emissions. As described previously, the modification to the minor NSR permit does not include any changes in the VOC emission limits. Therefore, the facility remains exempt from Title V permitting for criteria pollutants.

HAP emissions from the facility are limited by Condition 2 of the existing SOP to 9.9 tpy of any individual HAP and 24.9 tpy of all HAPs combined. These HAP emission limits are below the Title V major source thresholds for HAP of 10 tpy (for any individual HAP) and 25 tpy (for total combined HAPs), so the facility is not subject to Title V permitting requirements due to HAP emissions. The significant amendment to the SOP does not include any changes to these HAP emission limits. Therefore, the facility remains exempt from Title V permitting for HAPs.

X. Site Suitability

A. The character and degree of injury to, or interference with safety, health, or the reasonable use of property which is caused or threatened to be caused:

   The activities regulated in this permit have been evaluated consistent with 9 VAC 5-50-260, 9 VAC 5-60-200 *et seq.*, and 9 VAC 5-60-300 *et seq.* and have been determined to meet these standards where applicable. The emissions regulated in this permit are defined as de minimis consistent with existing DEQ policy and have therefore not been modeled as part of this permit development.

B. The social and economic value of the activity involved:

   This application has been deemed a modification to an existing facility and there will be no emission increases associated with this project. This project is deemed to have de minimus impact on the current emissions levels and does not affect the current social and economic value of the facility.

C. The suitability of the activity to the area in which it is located:

Consistent with the Board's Suitability Policy dated 9/11/87, the activities regulated in this permit are deemed suitable as follows:

1. Air Quality characteristics and performance requirements defined by SAPCB regulations:

   This permit is written consistent with existing applicable regulations. The emissions for criteria pollutants associated with this permit are below applicable modeling thresholds. Since lithographic printing facilities are not subject to the Air Toxics Rule (9 VAC 5, Chapter 60, Article 5), no modeling is required of toxic pollutants. Therefore, no modeling was performed.

2. The health impact of air quality deterioration which might reasonably be expected to occur during the grace period allowed by the Regulations or the permit conditions to fix malfunctioning air pollution control equipment;

   Condition 23 of the modified minor NSR permit requires the facility to notify the Regional Office within 4 business hours of any malfunction.

3. Anticipated impact of odor on surrounding communities or violation of the SAPCB Odor Rule;

   No violation of Odor requirements is anticipated as a result of this permit action.

D. The scientific and economic practicality of reducing or eliminating the discharge resulting from the activity.

   The state NSR program as well as the PSD and Non-Attainment programs require consideration of levels of control technology which are written into regulation to define the level of scientific and economic practicality for reducing or eliminating emissions. By properly implementing the Regulations through the issuance of this permit, the staff has addressed the scientific and economic practicality of reducing or eliminating emissions associated with this project.

XI. Public Participation Requirements

No public participation requirements apply to the modification of the existing minor NSR permit. However, pursuant to 9 VAC 5-80-990 C and 9 VAC 5-80-1020, public participation requirements do apply to the significant amendment of the existing SOP. Accordingly, a public notice regarding the proposed significant amendment to the SOP was published in the *Winchester Star* on February 25, 2013. The public comment period extended from February 26 to March 27, 2013. [describe any comments received]

XII. Permit Fee

The application fee for the modification to the existing minor NSR permit is $508, and for the significant amendment to the existing SOP is $813, for a total of $1,321. A check for $800 was deposited on January 25, 2013, and a check for the remaining $521 was deposited on February 12, 2013.

XIII. Other Considerations

Please review the engineering memoranda/checklists that were prepared for the following previous permit actions for the discussion of other emission units that are included in this permit:

CEDS Application No.	Permit Issuance Date
15	March 14, 2012 (NSR)
14	June 14, 2011 (NSR)
13	June 7, 2011 (exemption)
12	October 1, 2010 (NSR)
11	August 18, 2010 (SOP)
10	August 18, 2010 (NSR)
9	October 8, 2009 (NSR)
8	June 12, 2009 (SOP)
7	May 18, 2009 (NSR)
6	November 30, 2005 (SOP)
5	October 25, 2005 (NSR)
4	June 6, 2002 (NSR)
3	November 6, 2001 (NSR)
2	August 30, 2000 (NSR)
1	August 4, 2000 (NSR)
n/a	April 15, 1999
n/a	July 29, 1994

XIV. Recommendations

Approval of the proposed modification to the minor NSR permit and of the proposed significant amendment to the SOP are recommended.

Attachments

Attachment A – Potential To Emit Calculations for the Two Proposed New Printing Presses (P14 and P15)
Attachment B – Recent Past Actual Emissions for the Existing P11 Press and Projected Actual Emissions for the Two Proposed New Printing Presses (P14 and P15)